



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,298	04/09/2001	Frank Leonard Schadt III	PE0612	5947

23906 7590 10/19/2004

E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1128
4417 LANCASTER PIKE
WILMINGTON, DE 19805

EXAMINER

THORNTON, YVETTE C

ART UNIT PAPER NUMBER

1752

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,298

Applicant(s)

SCHADT III ET AL.

Examiner

Yvette C. Thornton

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 6-26, 30, 31 and 34 is/are allowed.
- 6) ☒ Claim(s) 27-29, 32 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

This is written in reference to application number 09/807298 filed on April 9, 2001.

Request for Continued Examination (RCE)

1. The request filed on April 22, 2004 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 09/807298 is acceptable and a RCE has been established.

An action on the RCE follows.

Response to Amendment

2. Claim 5 has been cancelled. Claims 1-4 and 6-34 are currently pending.

Claim Interpretations

3. The examiner has interpreted the instant claims as referring to a photoresist composition comprising a branched type polymer having a linear backbone and sidearms, which have at least two repeating units and a Mn of at least 1000 and a photoacid generator.

Claim Rejections - 35 USC § 102

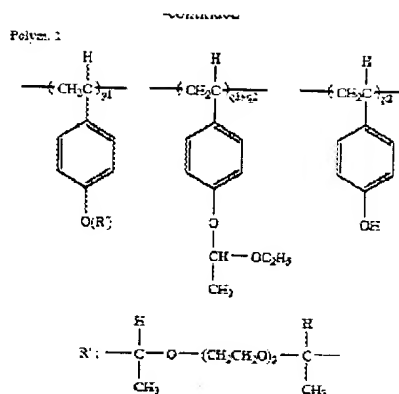
4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 27-29 and 32-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Watanabe et al. (US 5,942,367 A). Watanabe exemplifies in example 20, a resist composition comprising a polymer, a photoacid generator, a dissolution controller, a basic compound and a solvent mixture of propylene glycol methyl ether acetate (PGMEA) and cyclohexanone (CH) [instant claim 30-33] (see also ex. 1-19 and 21-

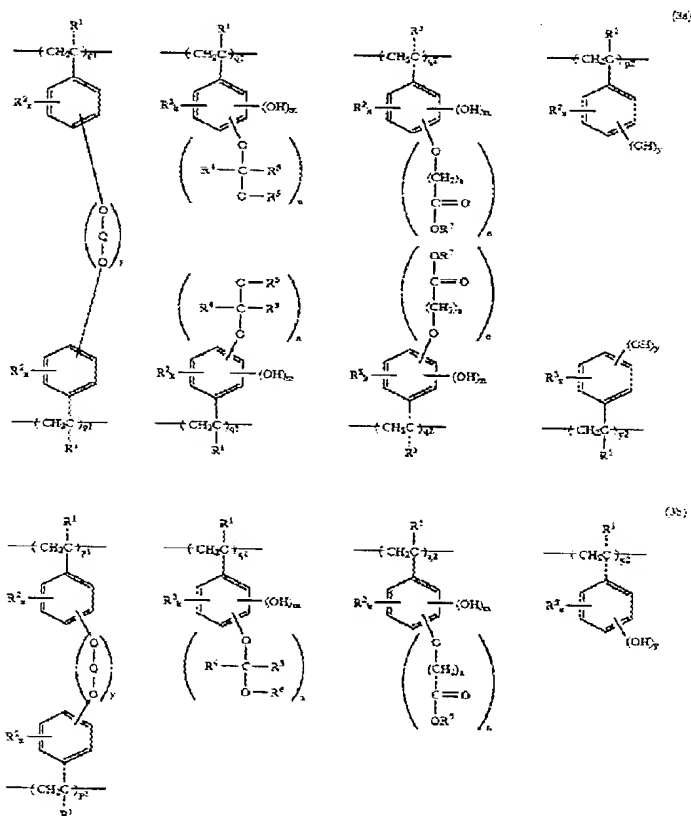
Art Unit: 1752



27). The said polymer has the structure:

(see table 3; ex. 20; c. 81,

l. 1-20). Watanabe teaches that the said polymer would crosslink to form an intermolecular linkage or an intramolecular linkage such as those represented by formula (3a) or (3b), below (see c. 25. l. 40-c. 30, l. 13).



Preferably the amount of the acid labile group and the crosslinking group combined is on the average more than 0 mol% to 80 mol%. By properly selecting the amounts of the crosslinking group having a C-

Art Unit: 1752

O-C linkage and the acid labile group within the taught range, the size and configuration of a resist pattern can be controlled as desired (c. 29, l. 26-35). It is the examiner's position that the taught polymer meets the limitations of the instant claims wherein the crosslinking process introduces branches onto the polymer backbone, which have repeating units. The exemplified photoacid generator, dissolution controller and solvent meet the limitations of the claimed photoacid generator, dissolution inhibitor and solvent, respectively.

Watanabe further exemplifies a process wherein the composition of example 20 was spin coated on a silicon wafer [claimed step (W)]. With the wafer rested on a hot plate, the coating was pre-baked for 90 seconds [claimed step (X)]. The formed film was exposed to light by means of an excimer laser stepper through a mask having a desired pattern [claimed step (Y)], baked at 110°C [instant claim 28] and developed with an aqueous solution of TMAH for 60 seconds [claimed step (Z); instant claim 29] to produce a positive pattern (c. 88, l. 1-12). Watanabe teaches that the taught composition is best suited for fine patterning with actinic radiation especially radiation having a wavelength of 254-193 nm such as deep UV, excimer laser light, X-ray or electron beam (c. 76, l. 53-c. 77, l. 26). One of ordinary skill in the art would readily envisage a process wherein the exemplified composition is exposed to deep UV light.

Response to Arguments

6. Applicant's arguments filed April 22, 2004 have been fully considered but they are not persuasive. Applicants argue that the pending claims are allowable because they depend on instant claim 1 which has been amended to include allowable subject matter. The examiner disagrees. Claim 27 is an independent claim, which does not contain the said allowable subject matter. As noted in the advisory action mailed on April 2, 2004, Applicants have proposed no arguments as to why the prior art reference of Watanabe does not anticipate the limitations of instant claims 27-29 and 32-33. Therefore, the rejection of the said claims is hereby maintained.

Allowable Subject Matter

7. Claims 1-4, 6-26, 30-31 and 34 are allowed.
8. The following is an examiner's statement of reasons for allowance: The prior art failed to teach and or suggest a photoresist composition wherein the photoacid generator is covalently bonded to the branched polymer as set forth in the instant claims.
9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. This is a RCE of applicant's earlier Application No. 09/807298. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
11. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday 8-6:30.

Art Unit: 1752

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Yvette Clarke Thornton
Primary Examiner
Art Unit 1752

yct
October 15, 2004